

ABSTRACT OF DISCLOSURE

An apparatus for performing a plasma-etching of a LSI device including a Cu interconnection, a low-k film, and a diffusion prevention film has a treatment chamber, into which an etching gas is introduced, and a support table which is equipped with electrodes and on which said LSI device is placed. In this apparatus, the etching gasses are turned into plasma by supplying radio frequency power to electrodes provided within the treatment chamber, so that the LSI device is etched with ions of the plasma. In this apparatus, a sulfur-containing gas and a fluorine-containing gas are mixed to the etching gasses, so that the diffusion prevention film is selectively etched against the low-k film.